

## CLAIM AMENDMENTS

### IN THE CLAIMS

This listing of the claims will replace all prior versions, and listing, of claims in the application or previous response to office action:

1. (Currently Amended) A method of identifying fault conditions in an automation system[[,]] comprising ~~the steps of~~:  
identifying components and sensors in the system,  
identifying inputs to each identified component,  
receiving outputs from said sensors;  
determining functional relationships between the inputs and outputs for each identified component,~~and~~  
determining [[a]] weight values for [[a]] possible fault conditions for each component based on said functional relationship; ~~and~~  
determining the most likely fault condition[[s]] from said possible fault conditions based on said weight values.
  
2. (Currently Amended) ~~The A~~ method [[of]] according to claim 1, further comprising the step of using the identified inputs and outputs of a specific component and sensors and the functional relationships of a corresponding generic component to identify ~~the~~ a possible fault condition[[s]].

3. (Currently Amended) ~~The A~~ method [[of]] according to claim 2, further comprising the step of defining component libraries that describe the functional relationships of the generic component[[s]].

4. (Currently Amended) ~~The A~~ method [[of]] according to claim 2, further comprising the step of creating a diagnostic program from the functional relationships of ~~the a~~ generic component[[s]] associated with each component.

5. (Currently Amended) ~~The A~~ method [[of]] according to claim 4, further comprising the step of transforming the functional relationships into fault conditions.

6. (Currently Amended) ~~The A~~ method [[of]] according to claim 5, wherein the step of transforming is implemented in an off-line phase during which the diagnostic program is created, and an on-line phase during which available inputs and outputs are supplied to the transformed functional relationships in the control program[[,]] to identify fault conditions.

7. (Canceled)

8. (Currently Amended) ~~The A~~ method [[of]] according to claim 1, further comprising the step of including state information for at least one of the components to define the state of the component at a different time.

9. (Currently Amended) A method of defining diagnostic code for an automation system[[,]] comprising ~~the steps of:~~

identifying the functional elements and associated sensors of the system;  
defining inputs for each of the functional elements;  
receiving outputs from said associated sensors;  
defining functional relationships between inputs and associated outputs for each functional element;~~and~~

expressing the functional relationships using a programming language;  
determining [[a]] weight values for a possible fault conditions for each functional element based on said functional relationship;~~and~~  
determining the most likely fault condition[[s]] from said possible fault conditions based on said weight values.

10. (Currently Amended) ~~The A~~ method [[of]] according to claim 9, wherein the programming language is a symbolic language.

11. (Currently Amended) ~~The A~~ method [[of]] according to claim 9, wherein the step of defining functional relationships for at least some of the functional elements includes utilizing a component library that defines the functional relationships between inputs and outputs of at least one generic element.

12. (Currently Amended) ~~The A~~ method [[of]] according to claim 11, wherein the step of defining the functional relationships includes the step of defining

functional relationships and inputs and outputs of ~~the a~~ generic element[[s]] corresponding to the functional elements in the system.

13. (Currently Amended) ~~The A~~ method [[of]] according to claim 9, further comprising the step of including state information for at least one of the components to define the state of the component at a different time.

14.-19. (Canceled)